REMARKS

The Amendment, filed in response to the Office Action mailed May 27, 2010, is believed to address all and every issue raised in the Office Action. Favorable reconsideration on the merits and allowance of the application are respectfully requested.

Dispositions of Claims

Claims 1-13 and 15 are all the claims pending in the application. Claims 8-12 have been withdrawn from consideration. Claims 1-7, 13 and 15 have been considered and rejected.

Withdrawn Rejections

Applicants thank the Examiner for withdrawing the previous rejections under 35 U.S.C. § 112, first and second paragraphs rejections and the 35 U.S.C. § 103 rejection.

Sequence Listing

The Examiner has required Applicants to submit a Sequence Listing which complies with the requirements set forth in 37 CFR 1.821-1.825, because the sequences disclosed in the first paragraph on page 48 of the specification does not comply with the requirements.

In response, Applicants concurrently submit a Sequence Listing which is in compliance with the Requirement set forth in 37 CFR 1.821-1.825, and a Statement in Support of Submission of Sequence Listing, under a separate cover. Consideration and entry of the Sequence Listing are respectfully requested.

Response to Rejection under 35 U.S.C. § 102(e)

On page 3 of the Office Action, claims 1-7, 13, and 15 stand rejected under 35 U.S.C. 102(e) as assertedly being anticipated by Kostenuik et al. (US Patent 6,756,480, reference of record) for reasons of record.

In particular, the Examiner reiterates the following reasoning, which was also stated in the prior Office Action, mailed on October 27, 2009:

> "Kostenuik et al. teach parathyroid hormone peptide (PHP) covalently linked to an Fc domain via a linker (e.g. see claims 1-3). Kastenuik et al. further teach that said linker can be non-peptide linker such as PEG linker (e.g. see Linkers defined on columns 33-34)." (Emphasis added.)
>
> The Examiner concludes Kostenuik teachings anticipate the claimed invention.

With regard to the Applicant's arguments, submitted on April 27, 2010, the Examiner asserts that they are not found persuasive, because, in contrast to applicant's arguments relying upon the lack of working examples of the prior art, the entire disclosure of a U.S. patent or an application publication when examining a PG-PUB application having an earlier filing date can be relied on to reject the claims. The Examiner goes on stating that

> "the teachings of Kostenuik et al., when considered in its entirety, would encompass a prathyroid hormone peptide (PHP) covalently linked to an Fc region (e.g. IgG4 Fc region) via non-peptide linker including PEG (e.g. see linkers defined on columns 33-34)." (Emphasis added.)

Applicants respectfully traverse for the following reasons.

1. Standard for Anticipation

It is well established that anticipation requires a single reference teaches all and every *limitation* of claims. In Net MoneyIn v. Verisign, Inc., 545 F.3d 1359 (Fed. Cir. 2008), the Federal Circuit states "Section 102 embodies the concept of novelty—if a device or process has been previously invented (and disclosed to the public), then it is not new, and therefore the claimed invention is "anticipated" by the prior invention. . . . Because the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—**must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements 'arranged as in the claim**.'" (Emphasis added.) In Net Money, a reference (iKP reference) disclosed two transaction protocols, but neither protocol contained all of the elements combined in the manner claimed. The Federal Circuit states "Thus, although the iKP reference might anticipate a claim directed to either of the two protocols disclosed, it cannot anticipate the system of claim 23. The district court was wrong to conclude otherwise."

Similarly, In re Meyer, 599 F.2d 1026, 202 USPQ 175 (CCPA 1979), the appellate court decided "A reference disclosing "alkaline chlorine or bromine solution" embraces a large number of species and cannot be said to anticipate claims to "alkali metal hypochlorite." In another case, Akzo N.V. v. International Trade Comm'n, 808 F.2d 1471, 1 USPQ2d 1241 (Fed. Cir. 1986), the Federal Circuit concludes "Claims to a process for making aramid fibers using a 98% solution of sulfuric acid were not anticipated by a reference which disclosed using sulfuric acid solution but which did not disclose using a 98% concentrated sulfuric acid solution."

2. Kostenuik fails to teach an embodiment which has all elements arranged as recited in claim 1 of the instant application

First, Applicants do not agree with the Examiner's characterization of teaching of Kostenuik et al. That is, as opposed to the Examiner's assertion "When considered in its entirety, Kostenuik would encompass a prathyroid hormone peptide (PHP) covalently linked to an Fc region (e.g. IgG4 Fc region) via non-peptide linker including PEG (e.g. see linkers defined on columns 33-34)," it is clear that Kostenuik discloses PHP covalently linked to an Fc region with or without a peptide linker.

In particular, Kostenuik clarifies in column 3 that a conventional Fe fusion technique is applied to PHP. Specifically, it is described in column 3 that "Recombinant and modified proteins are an emerging class of therapeutic agents. Useful modifications of protein therapeutic agents include combination with the "Fc" domain of an antibody and linkage to polymers such as polyethylene glycol (PEG) and dextran. Such modifications are discussed in detail in a patent application entitled, "Modified Peptides as Therapeutic Agents," U.S. Ser. No. 09/428,082, PCT appl. no. 99/25044, which is hereby incorporated by reference in its entirety."

In U.S. application no. 09/428,082 (US patent 6,660,843, which corresponds to PCT publication no. 99/25044), it is disclosed the details of the Fc fusion technique. Since an Fc fusion protein is prepared by expressing a physiologically active polypeptide and Fc fragment coincidentally using one expression vector in one expression cell, it is impossible to use a non-peptide linker between an Fc fragment and a physiologically active polypeptide. Moreover, in the case of using the Fc fusion technique, the Fc fragment can be fused in the N-terminus or the C-terminus of the physiologically active polypeptide. Therefore, claim 1 of Kostenuik requires that *"1. A polypeptide comprising a parathyroid hormone (PTH) peptide and a Fc domain, wherein said Fc domain is covalently attached to the C-terminus of said PTH peptide."*

That is, Kostenuik not only fails to teach a Fc fragment carrier as defined in claims of the instant application but also fails to enable to make such a Fc fragment carrier because the method taught in Kostenuik cannot produce the claimed Fc fragment carrier.

In this regard, one skilled in the art clearly would understand that Kostenuik discloses that a non-peptide linker would be used together with a vehicle such as a polymer (e.g. PEG or dextran) while a peptide linker would be used together with a vehicle which is Fc domain (column 8, lines 42-57).

In contrast, the claimed Fc fragment drug carrier clearly does not contain a peptide linker and it also excludes the Fc fusion technique taught by Kostenuik. For example, the present specification discloses that Fc fusion proteins containing peptide bonds, produced by genetic recombination, have various disadvantages (please refer to page 7 lines 7-19, and page 28 line 6-page 29 line 3). According to the present application, the Fc fragment and the physiologically active polypeptide can be prepared separately, and then the separately prepared Fc fragment and physiologically active polypeptide are covalently linked through a non-peptide polymer. Only the present invention makes it possible to overcome all of the problems of Fc fusion proteins, including improving protein production yield, as the two components of the complex are individually prepared and isolated by the best systems (please refer to page 29 lines 4-10).

Accordingly, Applicants respectfully submit that the rejection is not sustainable and its withdrawal is respectfully requested.

Response to Non-Statutory Double Patenting Rejections

1. In the Office Action, claims 1-7, 13, and newly added 15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending USSN 10/535,231 and claims 1-19 and 27-45 of copending USSN 10/535,232 for reasons of record.

In response, in view of the fact that USSN 10/535,231 has been issued into USP 7,736,653 (June 16, 2010) and USSN 10/535,232 has been issued into USP 7,737,260 (June 16, 2010), Applicants submit two Terminal Disclaimers with regard to the above two patents.

2. In the Office Action, claims 1-7, 13, and newly added 15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 and 24 of copending USSN 11/747,153 and claims 1-25 of copending USSN 11/910,962 and claims 1- 26 and 33 of copending USSN 11/947,697.

As the obviousness-type double patenting rejection is provisional and none of the above-listed pending application has allowed claims, Applicant respectfully request to hold the rejection abeyance.

Common Ownership Statement has been included in April 27 2010 Amendment

On paragraph 10 at page 7 of the Office Action, the Examiner maintains the statement that claims 1-7, 13 and 15 are directed to an invention not patentably distinct from claims 1- 19 and 24 of commonly assigned copending USSN 11/747,153 and claims 1-25 of commonly

assigned copending USSN 11/910,962 and claims 1-26 and 33 of commonly assigned copending USSN 11/947,697 for reasons stated above.

In this regard, Applicants point the Examiner's attention to the fact that a Statement of Common Ownership of the instant application and the above three pending applications at the time when the invention of the instant application was made in the Amendment filed April 27. 2010. Acknowledgment thereof is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number **202-775-7588**.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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